



MECHANICAL, AEROSPACE AND
NUCLEAR ENGINEERING DEPARTMENT
SCHOOL OF ENGINEERING AND APPLIED SCIENCE
405 HILGARD AVENUE
LOS ANGELES, CALIFORNIA 90024-1597

FAX: (310) 206-4830

February 23, 1994

Final Report Grant No. NSG-241-1
2290

To: University Affairs Office, 241-1
NASA-Ames Research Center
Moffett Feld, CA 94035-1000
Attn: Ms Barbara Hastings

From: William C. Meecham
Principal Investigator

Re: Final report, ref. ASC; 241-1
In communication dated Nov. 18, 1993

This report was somewhat delayed by fires and earthquakes, and slightly by mudslides.

I give relevant items for the last few years of the Grant

(NASA-CR-197287) FINAL REPORT
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Unclas

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Published Papers

McInerny, S. A., Meecham, W. C. and Soderman, P. T., "Pressure Fluctuations in the Tip Region of a Blunt-Tipped Airfoil" Am. Inst. of Aeronautics and Astronautics Journal, 28-1:6-13, January 1990.

Lee, S., and Meecham, W.C., "The Numerical Prediction of Noise Generated by a Jet Impinging on a Plate Using Large-Eddy Simulation and the Lighthill Analogy," Reviewed NCA-Vol. 15/FED-vP; 168, Flow Noise Modeling, Measurement and Control ASME, 1993.

Shen, J.P., and Meecham, W.C., "Quadrupole Sound From a Jet/Plate," J. Acoustical Soc. Am., 94-3:1415-1424, September 1993.

McInerny, S.A., Meecham, W. C. and Soderman, P. T., "An Experimental Investigation of Wing Tip Turbulence with Applications to Aerosound", Am. Inst. Aeronautics and Astrophysics, Paper no. 86-1918 AIAA Conference, Seattle, WA, July 1986.

Meecham, W.C., and Shen, J., "Noise Produced by a Jet Impinging on a Flat Plate," Proc. of the 13th International Congress on Acoustics, Belgrade, Yugoslavia, August 1989.

Submitted for Publication

Meecham, W.C., and Lee, S., "Computation of Quadrupole Directivity of Noise from Homogeneous Turbulence and from a Free Turbulent Jet."

Published Abstracts

McInerny, S.A., Meecham, W.C., Soderman, P.T., "Tip Noise Generation Using a Vortex Model", J. Acoust. Soc. Am. 80, Suppl. 1, p. S97, Fall 1986.

Meecham, W.C., Wildauer, E. "Digital Processing of Aeroacoustic Signals," J. Acoust. Soc. Am. 82 Supplement 1, p. S113, Fall 1987.

Shen, J., and Meecham, W.C., "Noise Radiation from a Subsonic Jet Using Correlations Between Hot-Wire Probes and Far-Field Microphones," Supplement J. Acoustical Soc. Am. S8:88-Suppl 1, November 1990.

Meecham, W.C., and Shen, J., "A Coherent Structure Model to Explain the Quadrupole Directivity of Noise on an Impinging Jet," J. Acoustical Soc. of Am., 89:Part 2, No. 4, p. 748, 1991.

Lee, S., and Meecham, W.C., "A Computation of Turbulent Flow Fields for a Square Jet and Far Field Aerosound Using Large Eddy Simulation," Bulletin of the American Physical Society, 37-8: Tallahassee, FL, November 1992.

Lee, S., and Meecham, W.C. "Large Eddy Simulation of Aerosound Using Homogeneous Turbulence as Example," Supplement J. Acoustical Soc. of Am., Vol. 92, No. 4, Pt. 2, New Orleans, 31 October to 4 November 1992.

Lee, S., and Meecham, W.C., "Jet Noise Generation Mechanism," J. Acoust. Soc. Am., 93-4, Pt. 2:2309, Ottawa Canada Meeting, May 1993.

Meecham, W.C., and Lee, Seungbae, "The Numerical Predictions of Noise Generated by a Jet Impinging on a Plate Using Large-Eddy Simulation and the Lighthill Analogy," Am. Soc. Mechanical Engineers, New Orleans, November 28 - December 3, 1993.

Contributions to Conferences and Seminars

McInerny, S.A., Meecham, W.C., Soderman, P.T. "An Experimental Investigation of Wing-Tip Turbulence with Application to Aerosound," Aeroacoustic Specialist Conference, November Amer. Inst. of Aeronautics and Astronautics, Seattle, WA, April 1986.

McInerny, S.A., Meecham, W.C., Soderman, P.T. "Tip Noise Generation Using a Vortex Model," Acoustic Society of America, Anaheim, CA, November 1986.

Shen, J., Lee, S., and Meecham, W.C., "A Coherent Structure Model to Explain the Quadrupole Directivity of Noise from an Impinging Jet," Supplement, J. Acoustical Soc. of Am., (116th meeting), Honolulu, Hawaii, November 1988.

Meecham, W.C., Wildauer, E., and McInerny, S.A., "Digital Processing of Aeroacoustic Signals", Acoustical Society of America, Miami, Florida, November 1987.

Meecham, W.C., and Shen, J., "Noise Radiation From a Jet Impinging on a Flat Plate," Acoustical Soc. of Am., Honolulu, Hawaii, November 1988.

Meecham, W.C., and Shen, J., "Noise Produced by a Jet Impinging on a Flat Plate," 13th International Congr. on Acoustics, Belgrade, Yugoslavia, August 1989.

Meecham, W.C., and Shen, J., "Noise Radiation from a Subsonic Jet Using Correlations Between Hot-Wire Probes and Far-Field Microphones," Acoustical Soc. of Am., San Diego, CA, November 1990.

Meecham, W.C., and Shen, J., "A Coherent Structure Model to Explain the Quadrupole Directivity of Noise on an Impinging Jet," Acoustical Soc. of Am., Baltimore, MD, April/May 1991.

Alexander, H., and Meecham, W.C., "Numerical Simulation of Aerosound Generated by an Impinging Jet and Noise Generation Mechanism from Viscous Surface Interaction," Am. Inst. of Aeronautics and Astronautics, Aeroacoustics Conf., Long Beach, CA, November 1993.

Lee, S., and Meecham, W.C., "Jet Noise Generation Mechanism," (Couldn't attend-family problem, paper read by Dr. G.P. Wilson), Acoustical Soc. of Am., Ottawa, Canada, April 1993.

Meecham, W.C., and Lee, Seungbae, "The Numerical Predictions of Noise Generated by a Jet Impinging on a Plate Using Large-Eddy Simulation and the Lighthill Analogy," Am. Soc. Mechanical Engineers, New Orleans, November 28-December 3, 1993.

Degrees Awarded with Some Part Support from the Grant

Doctor of Philosophy

McInerny, S.A.	"An Experimental Investigation of Wing-Tip Turbulence and Sound Radiated from the Tip Region of a Blunt-Tipped Airfoil"	Jun 1987
Shen, J.P.	"Quadrupole Phenomena of Noise from a Subsonic Jet Impinging on a Large, Rigid and Flat Plate"	Jun 1990
Lee, Seungbae	"Subgrid-Scale Modeling in Large-Eddy Simulation and its Application to Aerosound"	Jun 1992
Martin, S.A.	"Turbulent Airflow Noise Production and Propagation Patterns of a Subsonic Jet Impinging on a Flat Plate"	Nov 1993

Master of Science

Alexander, Hani	"Numerical Simulation of the Aerosound from an Impinging Jet and Nature of Noise Generation from Viscous Surface Interaction"	Oct 1993
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Status of Degree Holders

Lee, Seungbae	1992 Hyundai Motors, Seoul, Korea	Research Scientist
Martin, S.A.	1993 Venneklassen and Assoc., Santa Monica, CA	Senior Consultant
McInerny, S.A.	1987 University of Alabama	Associate Professor, Mechanical Engineering

Ph.D. Students, Not Yet Advanced to Candidacy

Alexander, Hani

Schein, David

Visitors to the UCLA Aeroacoustics Laboratory

Emmanuel Wildauer (Israel)	Visiting Scholar	1986	1990
Guglielmone, A., University of Bologna (Italy)	Visiting Scholar	Oct 1986	
Pompoli, R., Univ. of Bologna (Italy)	Visiting Scholar	Oct 1986	Nov 1986
Dr. Leonard L. Koss	Visiting Scholar	Dec 1989	

Dr. Michael El-Reheb

Visiting Scholar

Feb 1990 Feb 1991

Informal Visitors the UCLA Aeroacoustics Laboratory

Dr. Miomir Mijic
University of Budapest
April 1991

Dr. N.S. Namachivaya
Department of Aeronautics and Astronautics
University of Illinois
November 1990

Professor R.J. Wei
Director of Institute of Acoustics
University of Nanjing
Nanjing, China
October 1990

Professor Yoshihiro Tsuda
Mechanical Engineering
Ohita University
Ohita, Japan
September 1990

Professor H.Y. Bin
Shanghai University of Technology
Shanghai, China
May 1990

Professor T.C. Hui
Shanghai Jiao Tong University
Shanghai, China
April 1990

Dr. Michael L. Reheb
Visiting Scholar working on signal processing
February 1990 - February 1991

Professor Francesco Martelli
Department of Energetics
Florence, Italy
January 1990

Professor Rongjue Wi
Nanjing University
Nanjing, China
November 1989

Professor Toshitaka Fujiwara
Aeronautical Engineering Department
Nagoya University
Nagoya, Japan
October 1989

Professor Takayoshi Kimura
Mechanical Engineering
Kobe University
Kobe, Japan
August 1989

Professor Z.H. Teng
Department of Mathematics
Nanjing University
Beijing, China
April 1989

Professor Shlomo Carmy
Mechanical Engineering & Mechanics
Drexel University
June 1988

Professor O.B. Wilson
Lille, France and
Naval Postgraduate School - Physics
Monterey, California
September 1987

Dr. Luigi Franco
Dr. G. Asuslo
National Electrical Institute
Torino, Italy
October 1986

Dr. Atong-Guon Ik
Seoul, Korea
July 1986

Professor S.S. Huang
Department of Atmospheric Sciences
University of Nanjing
Nanjing, China
November 1988

Dr. Chang Guoxing
China Association for Science and Technology
Beijing, China
October 1988